

REMARKS

Claim 1 has been amended and new claims 8 and 9 have been added in this paper. Claims 3 and 4 have been canceled previously. Upon entry of the within amendments, claims 1, 2, and 5-9 will be pending for further examination on merits.

Claim 1 has been amended to more clearly define the subject matter of the present invention. Support for the amendment can be found in claim 4 as originally filed and also throughout Applicants' specification, for example, lines 21-24 at page 7 of the application as originally filed.

Support for claims 8 and 9 can be found in the claims as originally filed, and throughout Applicants' specification, such as, lines 7-23 at page 18, and Table 1 at page 20 of the application as originally filed.

No new matter is added by virtue of the within amendments.

As an initial matter, Applicants appreciate the Examiner's entry of the amendments filed on June 8, 2009, and the detailed comments provided relative thereto in the Advisory Action.

Applicants respectfully reserve the right to pursue any non-elected, canceled or otherwise unclaimed subject matter in one or more continuation, continuation-in-part, or divisional applications.

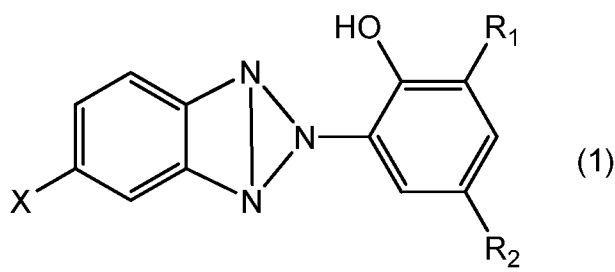
Applicants respectfully request reconsideration and withdrawal of the rejections directed to claims 1, 2, and 5-7, all of which Applicants respectfully submit are in condition for allowance (per the discussion below).

Rejections under 35 U.S.C. §103(a)

Claims 1, 2, and 5-7 are rejected under 35 U.S.C. §103(a) over Tsuruda *et al.* (WO 01/68061, also as U.S. 6,924,410; hereinafter as "Tsuruda"). The rejection is traversed.

Without conceding to the validity of the Examiner's allegation and solely for facilitating the prosecution of the present application, independent claim 1 has been amended to further define the features of this invention. Applicants contend that Tsuruda fails to teach, suggest or predict the patch as recited in the claims as amended.

The present invention is directed to a patch comprising a polyester backing, of which the ultraviolet transmittance is not more than 1.5% under the condition of 3.0 mW/cm² of ultraviolet intensity, wherein the backing contains a hydroxyphenylbenzotriazole derivative of formula (1):



wherein R₁ and R₂ are independently C₁₋₄ alkyl, X is chlorine, and the weight of the backing is 100 g/m² -130 g/m².

In contrast, Tsuruda teaches a single-layer backing having a light transmittance of not more than 15% under the condition of 0.14 mW/hr/cm² of ultraviolet intensity and at a temperature of 25° C (see column 4, lines 20-27 of Tsuruda). One example of Tsuruda reports achieving a phototransmission rate of 2% (see Table 1 of Tsuruda). Nonetheless, none of Tsuruda's backings have achieved an ultraviolet transmittance of not more than 1.5% under the condition of 3.0 mW/cm² of ultraviolet intensity. Further, Applicants note that Tsuruda does not teach or disclose in any of its 18 Examples a patch having a backing wherein a compound of formula (1) is contained.

In the Action, the Examiner asserts that Tsuruda teaches each and every aspect of the presently claimed patch except for the limitation that the backing of the present invention would have an ultraviolet transmittance of not more than 2.0% under the condition of 3.0 mW/cm² of ultraviolet intensity (*see* page 5 of the Action). The Examiner alleges that Tsuruda and the present invention are directed to patches with identical or substantially identical in structure or composition, and that a backing of Tsuruda would likely achieve the same or similar ultraviolet transmittance as that of the present invention (*see* page 6 of the Action). Applicants disagree.

Applicants note that the backings disclosed in Tsuruda does not contain any compound of formula (1) as recited in the present invention. Although chlorine-substituted benzotriazole derivatives are mentioned in Tsuruda as possible organic ultraviolet absorbents contained in its backings, Tsuruda does not teach or disclose any backing containing a chlorine-substituted benzotriazole derivative (as required in the present invention). Indeed, compounds used as organic ultraviolet absorbents in Tsuruda's backings are quite different in structure from the compounds of formula (1). Applicants note that the only benzotriazole derivative contained in the backings disclosed in Tsuruda is 2-(2'-hydroxy-5'-methylphenyl)-benzotriazole, which is not a chlorine-substituted benzotriazole derivative (*see*, e.g., Examples 1, 6 and 11 in Tsuruda).

It is well understood in the art that a chlorine aromatic substitution will dramatically change chemical and physical properties of a compound. For example, chlorine is known for reducing the reactivity of an aromatic ring to which it is attached. Further, a chlorine substitution will also change the electron density of the aromatic ring. Indeed, the compounds used in Tsuruda and the compounds of formula (1) of this invention belong to completely different classes. Thus, contrary to the Examiner's assertion, Applicants contend that the backings of Tsuruda and those of the present application are substantially different in composition and structure.

Further, Applicants contend that one skilled in the art would not be motivated to modify the patches disclosed in Tsuruda to arrive at the presently claimed subject matter. Applicants note that the conditions disclosed in Tsuruda to measure the phototransmission value of a backing and the current conditions to measure the UV transmittance value are quite different, for example, the Tsuruda backing was irradiated by fluorescent lamps and sunlight lamps to observe the ultraviolet intensity, while the present backing was irradiated under direct sunlight (*see*, e.g., lines 26-33 of col. 18 of Tsuruda, and lines 2-7 of page 8 of the instant application). Further, the phototransmission in Tsuruda was measured under an ultraviolet intensity of 0.14 mW/hr/cm², while the UV transmittance of this application was measured under an ultraviolet intensity of 3.0 mW/cm².

Accordingly, Applicants submit that the UV transmittance value of the present application and the phototransmission value of Tsuruda are measured under completely different conditions. Thus, a skilled artisan would not predict the UV transmittance value of a backing containing a chlorine-substituted compound, based on Tsuruda's teachings of the phototransmission value of a backing which contains a compound without chlorine substitution. In the absence of such a teaching or prediction, it would be highly unlikely that a skilled artisan will be motivated to pick any specific compound of formula (1) out of Tsuruda's pyramid of organic ultraviolet absorbents mentioned as possible components, and further formulate the compound with other components in order to obtain a backing with the desirable 1.5% of ultraviolet transmittance under the condition of 3.0 mW/cm² of ultraviolet intensity (as in the present invention).

Applicants further submit that ultraviolet absorbents used in the backings determine fundamental properties of the patches that are obtained. In Example 2 of the instant application, a compound of formula (1), that is, 2-(3-t-butyl-5-methyl-2-hydroxyphenyl)-5-chlorobenzotriazole, was used in the backing, while in Comparative Example 2, a benzotriazole derivative disclosed in Tsuruda, that is, 2-(2'-hydroxy-5'-methylphenyl)-benzotriazole, was used in the backing. Even *if* all other details in preparation of the two backings are the same, the ultraviolet transmittance values achieved by the two patches

are quite different: the UV transmittance value for Example 2 is 1.38%, while the UV transmittance value for Comparative Example 2 is 2.83% (*see* Table 1 of Applicants' specification). In accordance with these differences in ultraviolet transmittance values, the patch of Example 2 and that of Comparative Example 2 are also significantly different in their photostability: 98.7% of drug remains in Example 2 after an 8-hour irradiation at a dose of about 10000 mJ/M² per hour, while only 77.5% of the drug remains in Comparative Example 2 after the same exposure. Accordingly, Applicants submit that the specific ultraviolet absorbent used in the backings of the present invention renders the instantly claimed patch patentably distinct over the cited art.

Applicants further submit that Tsuruda does not teach or suggest any effect that the weight of backing may place on its ultraviolet transmittance, let alone a combination of any specific chlorine-substituted benzotriazole derivative, the specific ultraviolet transmittance and the specific weight range (i.e., 100 g/m² – 130 g/m²) required for the backing in this invention.

Further, Applicants submit that the record shows no reason why one skilled in the art would modify Tsuruda to arrive at the present patch, wherein (1) a polyester backing having ultraviolet transmittance not more than 1.5% under the condition of 3.0 mW/cm² of ultraviolet intensity; (2) the weight of the polyester backing is between 100 g/m² – 130 g/m²; (3) a pressure-sensitive adhesive layer containing a nonsteroidal anti-inflammatory drug; and (4) the backing contains a hydroxyphenylbenzotriazole derivative represented by the general formula(1) as recited in the instant claim 1. In *Eisai Co., Ltd v. Dr. Reddy, Labs., Ltd*, 2007-1397, slip op. at 8 (Fed. Cir. Jul. 21, 2008)(“*Eisai*”), the CAFC stated that “KSR presupposes that the record up to the time of invention would give some reasons, available within the knowledge of one of skill in the art, to make particular modifications to achieve the claimed compound.” (*citing Takeda Chem. Indus. v. Alphapharm Pty., Ltd*, 492 F.3rd 1350, 1357 (Fed. Cir. 2007))(and holding at 7, that the prior art taught compounds with fluorine-substituted groups that increased lipophilicity, whereas “the record... shows no reason for a skilled artisan to begin with [a prior art

compound] only to drop the very feature, the fluorinated substitute, that gave this advantageous property”).

Tsuruda thus fails to teach or suggest the subject matter of the present claims for at least the above reasons. By way of further explanation:

First, as previously discussed, Tsuruda and the present invention are directed to two fundamentally different patches, as evidenced by different compounds used as ultraviolet absorbents in their backings, different conditions of ultraviolet intensity used to measure different light transmittances (phototransmittance and ultraviolet transmittance) of their backings, and different properties that the patches demonstrate.

Second, Tsuruda fails to teach or suggest a patch comprising a backing, for which a combination of a specific ultraviolet absorbent represented by formula (1), a specific weight and a specific UV transmittance value, is required (as directed in this invention);

Third, as previously discussed, Tsuruda does not furnish any motivation or suggestion to a skilled artisan to modify its preparations to reach the present invention.

Fourth, patches of the present invention have achieved a superior, low ultraviolet transmittance value with the backing, while exhibiting excellent photostability results even after being exposed to the direct rays of the sun in a season of high ultraviolet dose (see page 4, lines 8-13 of the present application). Applicants submit that the backings of this invention have achieved an ultraviolet transmittance of not more than 1.5% under the condition of 3.0 mW/cm^2 of ultraviolet intensity. As will be readily appreciated in the art, obtaining an ultraviolet transmittance lower than 1.5% is very difficult to achieve. Although the phototransmittance value of Tsuruda's backings is reportedly as low as 2% at an ultraviolet intensity of about 0.14 mW/hr/cm^2 , Tsuruda does not report that any of its backings has achieved an ultraviolet transmittance of not

more than 1.5%, let alone a backing having an ultraviolet transmittance of not more than 1.5% under the ultraviolet intensity of about 3.0 mW/hr/cm^2 (as recited in the instant claims).

Further, Applicants submit that patches of the present invention have achieved superior photostability, and thus can be favorably used for application of a nonsteroidal anti-inflammatory drug (NSAID) which is low in stability toward ultraviolet light. More specifically, at least 98.7% of drug remains in the patch of the present invention after an 8-hour irradiation at an ultraviolet dose of about 10000 mJ/M^2 per hour (see, e.g., Table 1 of the present application). In contrast, only up to 84% of drug remains in a patch of Tsuruda after a similar exposure (see, e.g., Table 2 of Tsuruda and Table 1 of the present application). Clearly, the present invention has achieved surprisingly outstanding technical effects compared to the prior art.

In addition, Applicants submit that, because of the superiority of the present invention, even when the pressure-sensitive adhesive layer contains no ultraviolet absorbent, there is no degradation of the pressure-sensitive adhesive layer and there is excellent stability and safety. This is due to the fact that there is no contact to the skin of the ultraviolet absorbent itself (see page 4, lines 13-20 of the present application). In contrast, Tsuruda does not teach or suggest any such effects being rendered by the specific combinations as presently claimed. Nor does Tsuruda provide any motivation or suggestion to achieve such technical effects. Indeed, because Tsuruda is dealing with backings containing compounds of completely different class as ultraviolet absorbents and also because of different measuring conditions used, it would not be possible for a skilled artisan to arrive at the present claimed patch with the desirable technical results in view of Tsuruda's disclosure, nor would there be any motivation or suggestion in that regard.

To properly determine a *prima facie* case of obviousness, the Examiner "must step backward in time and into the shoes worn by the hypothetical 'person of ordinary

skill in the art' when the invention was unknown and just before it was made." M.P.E.P § 2142. This is important as "impermissible hindsight must be avoided and the legal conclusion must be gleaned from the prior art." *Id.* Four factual inquiries must be made: first, a determination of the scope and contents of the prior art; second, a determination of the differences between the prior art and the claims in issue; third, a determination of level of ordinary skill in the pertinent art; and fourth, an evaluation of evidence of secondary consideration. *Graham v. John Deere*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966). Three criteria may be helpful in determining whether claimed subject matter is obvious under 103(a): first, if there is some suggestion or motivation to modify or combine the cited references; second, if there is a reasonable expectation of success; and third, if the prior art references teach or suggest all the claim limitations. *KSR Int'l Co. v. Teleflex, Inc.* No 04-1350 (U.S. Apr. 30, 2007).

Applicants submit that neither Tsuruda nor the knowledge generally available to one of ordinary skill in the art teaches or suggests all the limitations of the instant claims (as above discussed). Further, there is no suggestion or motivation to modify the cited art to make the claimed invention, nor is there any reasonable expectation of success in the art to achieve the desirable results of the present invention.

In view thereof, Applicants submit that the present invention is patentable over Tsuruda. Accordingly, reconsideration and withdrawal of the rejection under 35 USC §103(a) are requested.

Claims 1 and 4 are rejected under 35 U.S.C. §103(a) over Tsuruda in view of Cordes *et al.* (WO 97/232,227; hereinafter "Cordes"). The rejection is traversed.

Applicants respectfully submit that the combined disclosures of Tsuruda and Cordes still fail to teach, suggest or predict the patches recited in the present claims.

The deficiencies of Tsuruda are addressed above in detail.

Cordes is added for its alleged disclosure of a polyester backing layer with about $96 \pm 5 \text{ g/m}^2$. However, the addition of Cordes is still insufficient to cure the deficiencies in Tsuruda. As such, the combination of Tsuruda and Cordes cannot sustain the rejection. Applicants submit that the cited art fails to teach or suggest a patch with a backing comprising a specific ultraviolet absorbent as represented by formula (1), wherein the backing has an ultraviolet transmittance not more than 1.5% under the condition of 3.0 mW/cm^2 of ultraviolet intensity, and within the weight of 100 g/m^2 to 130 g/m^2 (as recited in the present invention).

Moreover, Applicants submit that Cordes does not disclose a polyester backing layer with a weight per area of $96 \pm 5 \text{ g/m}^2$. It only discloses a film of a matrix weighing $96 \pm 5\% \text{ g/m}^2$ as dry weight and corresponding to 1.25 g estradiol and 8.32 g NETA per m^2 of the dry matrix. Applicants submit that "the weight of a film of a matrix" is a concept different from "the weight of backings." A person skilled in the art considers that a film of a matrix means a film containing the active ingredients, and "the weight of backings" used in the present application corresponds to the weight of the film only, and not to the weight of a film of a matrix. Thus, the weight of the film only for the Cordes backings is within the following range:

Minimum: $96 \times 0.95 - 1.25$ (weight of estradiol) $- 8.32$ (weight of NETA) = 81.63

Maximum: $96 \times 1.05 - 1.25$ (weight of estradiol) $- 8.32$ (weight of NETA) = 91.23

Clearly, Cordes does not teach a polyester backing having a weight range from 100 to 130 g/m^2 . Instead, Cordes only teaches a backing having a weight range from 81.63 to 91.23 g/m^2 .

As such, the present invention is clearly distinguishable from the art cited in Tsuruda and Cordes. Consequently, the skilled artisan would not arrive at the present invention based on their disclosures, even in combination.

For all of the foregoing reasons, reconsideration and withdrawal of the rejection over Tsuruda and Cordes are requested.

Double-Patenting Rejection

Claims 1, 2, and 4-7 are non-provisionally rejected under the doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 1-3, 6, and 9 of U.S. Patent No. 6,924,410 (hereinafter "the '410 patent").

Applicants respectfully traverse the non-provisional double patenting rejection over claims 1-3, 6, and 9 of the '410 patent ("the cited claims"). It is submitted that the cited claims do not recite a patch having a backing containing any specific chloro-substituted benzotriazole derivative as represented by formula (1), that the cited claims do not recite that the ultraviolet transmittance of the backing is not more than 1.5% under the condition of 3.0 mW/cm² and the weight of the backing is within the range of 100 to 130 g/m². As previously discussed, the specific combination of chloro-substituted benzotriazole derivative, the specific ultraviolet transmittance (measured under the specific condition) achieved and the specific weight range of the backing are all important aspects of the instantly claimed patch, which renders the present invention patentably distinct over the patches claimed in the '410 patent. As such, the double patenting rejection over the '410 patent is believed to be overcome.

CONCLUSION

In view of the above amendments and remarks, Applicants believe the pending application is in condition for immediate allowance.

PETITION FOR EXTENSION OF TIME AND FEE AUTHORIZATION

Applicant requests a two-month extension of time to file the within response. The Commissioner is authorized to charge the extension fee, the RCE fee and any other

fees associated with this submission to our Deposit Account, No. 04-1105, Reference 64286(49811). Any overpayment should be credited to said Deposit Account.

Dated: August 18, 2009

Customer No. 21874

Respectfully submitted,
Electronic signature: /Weiying Yang/
Weiying Yang
Registration No.: 61,637
Christine C. O'Day
Registration No.: 38,256
EDWARDS ANGELL PALMER & DODGE
LLP
P.O. Box 55874
Boston, Massachusetts 02205
(617) 517-5558
Attorneys/Agents For Applicants